

# Exact solution of the Muskat-Leibenzon problem for a growing elliptic bubble

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## Abstract

© 2016, Pleiades Publishing, Ltd. The exact solution of the two-phase time-dependent Hele-Shaw problem (in other words, the plane Muskat-Leibenzon problem) in which a fluid occupied an unbounded channel is displaced by another fluid incoming through a slitted cut in the channel. In this case the interface between the phases, namely, fluids of different viscosity, evolves as an ellipse whose area and eccentricity vary continuously.

<http://dx.doi.org/10.1134/S0015462816050100>

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## Keywords

growing elliptic bubble, Muskat-Leibenzon problem, two-phase time-dependent Hele-Shaw problem